

HEALTH CONSULTATION

SMOKEY MOUNTAIN SMELTERS KNOXVILLE, KNOX COUNTY, TENNESSEE

BACKGROUND AND STATEMENT OF ISSUES

The U.S. Environmental Protection Agency (EPA) - Region IV asked the Agency for Toxic Substances and Disease Registry (ATSDR) to assess the public health impact of environmental contamination at the Smokey Mountain Smelters site. This health consultation will be based on data and information contained in the Preliminary Assessment Report prepared by the Tennessee Department of Environment and Conservation (TDEC). Further site evaluation is warranted as additional information becomes available.

The site is located in Knox County, just outside the city limits of Knoxville, Tennessee. The owner formerly operated a secondary aluminum smelter on the property. The property covers approximately 13 acres, and contains a large industrial process building that housed the rotary and casting furnaces. The area surrounding the facility is described as being medium commercial and dense residential.

Wastes from smelting operations were dumped or buried on site. The wastes included bag house dust and slag from the rotary furnaces. The disposal area is unfenced and access is unrestricted. EPA staff observed footprints and discarded candy wrappers on site, indicating that children are trespassing on the property.

In October 1997, representatives of the State of Tennessee, Division of Superfund, conducted a Preliminary Assessment of the site. Officials collected four waste samples from indoor and outdoor waste piles and dust from the bag house and analyzed for metals and extractable organic compounds. The maximum concentrations of metals detected in the waste samples were: aluminum - 135,000 parts per million (ppm), copper - 42,900 ppm, and lead - 291 ppm. Polyaromatic hydrocarbons (PAHs) were detected in bag house dust at concentrations ranging from 143 parts per billion (ppb) [phenanthrene] to 2,170 ppb [indeno(1,2,3-cd)pyrene].

One sediment sample was collected 20 yards downgradient of a waste pile. The concentrations of metals and PAHs in this sample were not at levels of health concern.

Using passive dosimeter tubes, officials detected ammonia concentrations of 15 ppm at the surface of a disturbed waste pile and at 20 ppm inside an auger hole in a waste pile. Ammonia was not detected (detection limit not specified) at the surface of other waste piles or above an on-site lagoon.

DISCUSSION

Waste materials containing aluminum, copper, and PAHs were disposed on-site. Since access to the site is unrestricted, trespassers could be exposed to contaminants in these wastes. Based on the reported data, such intermittent exposures would not pose a health hazard. Furthermore, the concentrations of contaminants detected in on-site wastes would not pose a health hazard for adults who worked on the site and were exposed under an occupational exposure scenario.



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The potential impact of site-related contamination on groundwater quality in the area was not investigated. This is of potential concern because: (1) An estimated 1,000 cubic yards of wastes were buried on site or disposed of on the surface. (2) Karst geology in the area would allow contaminants to easily migrate to the groundwater. (3) Groundwater wells in the area are as shallow as 35 feet below ground surface. TDEC staff reported that some residents may obtain water from private wells, even though the area is supplied by a public water system.

The potential impact of site-related contamination on ambient air quality was not investigated. Possible air contaminants of concern include metals, total suspended particulates, and ammonia. Off-site migration of air contaminants could impact nearby residents; an estimated 207 people live within 1/4 mile of the site. Monitoring results obtained with passive dosimeter tubes indicated that ammonia is emanating from some of the waste piles. In addition, State officials reported smelling ammonia during on-site inspections. This suggests that ammonia is present in on-site ambient air at concentrations within the human odor threshold range of 0.039 to 58.2 ppm.

The physical structure of the main building is unstable, and a portion of the north wall has collapsed. Therefore, the condition of the building poses a physical hazard to trespassers.

CONCLUSIONS

1. Based on limited data, the concentrations of contaminants detected in on-site, solid waste materials do not pose a public health hazard under current site conditions.
2. Information is not available to assess the potential impact of site-related contamination on groundwater and ambient air quality in the area.
3. The unstable condition of the industrial process building poses a physical hazard to trespassers.

RECOMMENDATIONS

1. Further characterize the extent and nature of on-site and possible off-site contamination.
2. Investigate the potential impact of contamination on groundwater quality in the area. This should include a survey of private well use in the area.
3. Investigate the potential impact of contamination on ambient air quality in the area.
4. Restrict public access to the industrial process building.

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